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the dorsal medulla oblongata (APX). Seven controls were similarly surgically treated, except the *area postrema* was left intact (SHAM). Following recovery from surgery, animals were anesthetized with halothane and subjected to a glucose-clamp procedure whereby plasma glucose was held constant by a glucose infusion varied in response to frequently determined plasma glucose concentration. After 60 minutes of glucose-clamp, 2mmol L-arginine was infused intravenously over 10 minutes. Plasma glucose, lactate, and insulin were measured for 90 min after L-arginine. There was a large increase in plasma insulin concentration in APX animals that was not observed in SHAM rats. These results demonstrate that pathways controlling insulin secretion, a key hormone involved in fuel homeostasis, include the *area postrema*.

One skilled in the art would readily appreciate that the present invention is well adapted to carry out the objects and obtain the ends and advantages mentioned, as well as those inherent therein. The molecular complexes and the methods, procedures, treatments, molecules, specific compounds described herein are presently representative of preferred embodiments are exemplary and are not intended as limitations on the scope of the invention. Changes therein and other uses will occur to those skilled in the art which are encompassed within the spirit of the invention are defined by the scope of the claims.

It will be readily apparent to one skilled in the art that varying substitutions and modifications may be made to the invention disclosed herein without departing from the scope and spirit of the invention.

All patents and publications mentioned in the specification are indicative of the levels of those skilled in

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CLAIMS

What is claimed is:

1. An assay method for use in identifying or screening for compounds that stimulate or inhibit *area postrema* biological function, which comprises the steps of,

(a) bringing together a test sample and an *area postrema* preparation, said test sample containing one or more test compounds;

(b) incubating said test sample and said *area postrema* preparation under conditions which would permit activation by said test compound of a biological process in, or the binding of said test compound to, said *area postrema* preparation; and,

(c) identifying those test samples containing one or more test compounds which detectably activate, or bind to, said *area postrema* preparation.

2. The assay method of claim 1 which further comprises,

(d) screening said test samples which detectably bind to said *area postrema* preparation for *in vitro* or *in vivo* stimulation or inhibition of *area postrema* mediated activity; and,

(e) identifying those test samples which act as agonists or antagonists of said *area postrema* biological function.

3. The assay method of claim 1, wherein said *area postrema* preparation comprises isolated cells.

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4. The assay method of claim 1, wherein said *area postrema* preparation comprises isolated membranes.

5. The assay method of claim 1, wherein said *area postrema* preparation comprises isolated tissue.

6. The assay method of claim 1, wherein said test samples which detectably bind to said *area postrema* preparation are identified by measuring the displacement of a labeled first ligand from said *area postrema* preparation by said test sample, and comparing the measured displacement of said first labeled ligand from said *area postrema* preparation by said test sample with the measured displacement of said first labeled ligand from said *area postrema* preparation by one or more known second ligands.

7. The assay method of claim 1, wherein said test sample contains more than one test compound, which further comprises the steps of,

(d) preparing two or more additional test samples from said test sample, said additional test samples being characterized in that they contain a lesser number of test compounds than said test sample from which they were prepared; and,

(e) repeating steps (a)-(d) as many times as required until the test compound or compounds which activate, or bind to, said *area postrema* preparation have been identified.

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8. The assay method of claim 2, wherein said test samples which detectably bind to said *area postrema* preparation are identified by measuring the displacement of a labeled first ligand from said *area postrema* preparation by said test sample, and comparing the measured displacement of said first labeled ligand from said *area postrema* preparation by said test sample with the measured displacement of said first labeled ligand from said *area postrema* preparation by one or more known second ligands.

9. The assay method of claim 8, wherein said test sample contains more than one test compound, which further comprises the steps of,

(f) preparing two or more additional test samples from said test sample, said additional test samples being characterized in that they contain a lesser number of test compounds than said test sample from which they were prepared; and,

(g) repeating steps (a)-(f) as many times as required until the test compound or compounds which bind to said *area postrema* preparation have been identified.

10. An assay method for evaluating one or more receptor binding characteristics sought to be determined for a known or candidate *area postrema* biological function agonist or antagonist compound, which comprises the steps of,

(a) assessing or measuring the ability of said compound to compete against a labeled ligand for binding to said *area postrema* preparation;

(b) assessing or measuring the ability of said compound to compete against said labeled ligand of claim 4.

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11. An assay method for determining the presence or amount of an *area postrema* binding compound in a test sample to be assayed for said compound, which comprises the steps of,

(a) bringing together said test sample to be assayed and an *area postrema* preparation;

(b) measuring the ability of said test sample to compete against a labelled ligand for binding to said *area postrema* preparation; and, optionally,

(c) relating the amount of *area postrema* binding compound in said test sample with the amount of *area postrema* binding compound measured for a control sample in accordance with steps (a) and (b), said control sample being known to be free of any *area postrema* binding compound, and/or relating the amount of *area postrema* binding compound in said test sample with the amounts of *area postrema* binding compound measured for control samples containing known amounts of *area postrema* binding compound in accordance with steps (a) and (b), to determine the presence or amount of *area postrema* binding compound in said test sample.

12. A method for separating *area postrema* binding compounds from a sample, which comprises the steps of,

(a) bringing together said sample and an area postrema preparation, said *area postrema* preparation comprising components of said *area postrema* bound to a solid carrier; and

(b) separating any *area postrema* binding compound which is bound to said *area postrema* preparation from the remainder of said test sample which is unbound.

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13. A method for screening a biological substance for the presence of components of said area of postrema, which comprises the steps of,

(a) bringing together said biological substance with first *area postrema* binding compound;

(b) bringing together said biological substance with a second *area postrema* binding compound;

(c) optionally bringing together said biological substance with one or more additional *area postrema* binding compounds; and,

(d) determining the relative binding affinities of said *area postrema* binding compounds for said *area postrema* preparation in said biological substance.

14. A method of screening for a compound able to modulate a biological function of the *area postrema* related to fuel homeostasis, comprising adding a compound to an *area postrema* preparation, and measuring the effect on said biological function.

15. The method of claim 14, wherein said *area postrema* preparation comprises one or more materials selected from the group consisting of *area postrema*, nucleus tractus solitarius material, and material from the dorsal motor nucleus of the vagus nerve.

16. The method of any of claims 14 or 15, wherein said material is selected from the group consisting of a membrane, a cell and a tissue.

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17. The method of claim 14, wherein said biological function is modulation of pancreatic endocrine secretion.

18. The method of claim 14, wherein said biological function is modulation of body energy content.

19. The method of claim 14, wherein said biological function is linked to a metabolic disease.

20. The method of claim 19, wherein said metabolic disease is selected from the group consisting of diabetes and obesity.